nce Library

AUG 2 0 1945

ROCKS and MINERALS

Official Journal
of the
Rocks and Minerals
Association

A Magazine for
Mineralogists,
Geologists and
Collectors

★

HELP FINISH THE FIGHT —
MORE BOMBS ARE NEEDED!
INVEST ALL YOU CAN IN
WAR BONDS

AUGUST, 1945

25c

Vol. 20, No. 8 Whole No. 169

Streamliner

DIAMOND SAWS

Streamliner Diamond Saws, were tops before the War, during the War, and after the War. No Diamond Saw will ever be built at any price to out perform a "Streamliner".

What you get when you get a new Mark V plus X "Streamliner".
A Saw that needs absolutely no breaking in, a 12" diameter for instance that will now cut with efficient operation not 2000 Sq. Inches, of assorted materials, but will readily cut 3000 Sq. Inches.

This 12" diameter will saw at the rate of from 2 to 3 Square inches of Agate per minute. It will cut Quartz Crystal at 5 Square Inches per minute. Every Saw quaranteed for performance. Prices as follows, 6" — **$5.50,** 8" — **$6.50,** 10" **$7.50,** 12" — **$8.50,** 14" — **$11.00.** State Arbor hole size. Postage and Insurance 25c.

WILFRED C. EYLES

THE ENCHANTED PUEBLO

BAYFIELD, COLORADO

ROCKS and MINERALS

PUBLISHED MONTHLY

Edited and Published by PETER ZODAC

August 1945

CONTENTS FOR AUGUST, 1945

CHIPS FROM THE QUARRY 358
PSEUDOMORPHISM AND ZONAL GROWTH OF GARNETS FROM GARNET HILL, CALIF. *By John N. Trainer* 359
BERUFJORD, ICELAND 363
CORRELATION OF THE FORDHAM GNEISS. *By Thomas W. Fluhr* 364
KILAUEA CRATER, HAWAII 365
MINERAL POLYMERS. *By Ronald L. Ives* 366
DENMARK NOTED FOR FLINT PEBBLES 367
FINEST CALCITES OCCUR IN ENGLAND 367
A MOLYBDENITE OCCURRENCE IN EGYPT 367
WORLD'S FINEST APATITES AND EPIDOTES OCCUR IN AUSTRIA 368
TWO COPPER MINES IN AUSTRALIA 368
WORLD'S FINEST DIOPTASE FOUND IN SIBERIA 368
SWITZERLAND NOT A MINING COUNTRY 368
PECULIAR TWINNING IN RUTILE FROM BRAZIL. *By C. R. Toothaker* 369
SEMI-PRECIOUS STONES HAVE BEEN FOUND THERE! 370
FIELD TRIP TO SAND PITS OF MARYLAND. *By Miller and Sirota* 371
SOME NOTES ON ALASKA. *By J. H. Wandve* 372
GOLD IN THE FIJI ISLANDS. *By Pfc. Floyd R. Johnson* 373
GERMANITE AT TSUMEB, S. W. AFRICA 373
MOLYBDENITE IN FRENCH MOROCCO 373
FAMOUS NEW JERSEY QUARRY ABANDONED 373
THE RAND, WORLD'S RICHEST GOLD FIELD 373
S/SGT. DELBERT BEN CARR. (Obituary Notice). *By P. Zodac* 374
MAGNETITE SANDS ON BOUGAINVILLE. *By Pfc. Floyd R. Johnson* 375
A TRIP TO SAIPON. *By Ensign Robert F. Monohon* 375
"ME AND PA". TWO OLD ROCKHOUNDS. 376
CHALCOPYRITE IN UTAH 376
CLUB AND SOCIETY NOTES 377
WITH OUR DEALERS 378
PENNSYLVANIA'S HIGHEST MOUNTAIN 378
BIBLIOGRAPHICAL NOTES 379
COBALT IN FRENCH MOROCCO 379
WITH OUR MEMBERS 380
ROMANIA 4TH LARGEST OIL COUNTRY 380
INDEX TO ADVERTISERS 408

Entered as second-class matter September 13, 1926, at the Post Office at Peekskill, N. Y. under the Act of March 3, 1879

Copyright 1945 by Peter Zodac

Title registered in U. S. Patent Office

Specially written articles (as contributions) are deseired.
Subscription price $2.00 a year; Current numbers, 25c a copy. No responsibility is assumed for subscriptions paid to agents and it is best to remit direct to the Publisher.
Issued on the 1st day of each month.

Authors alone are responsible for statements made and opinions expressed in their respective artices.

ROCKS and MINERALS PEEKSKILL, N. Y., U. S. A.

The official Journal of the Rocks and Minerals Association

CHIPS FROM THE QUARRY

WAS YOUR COPY OF THE JUNE ISSUE LATE?

During the past few months we have received a number of letters from members complaining that their copies of *Rocks and Minerals* were arriving late, some — very late. O. H. Reese, and George M. White, both of Colorado Springs, Colo., wrote us that their copies of the June issue failed to arrive by July 9th (a postscript to Mr. Reese's letter stated, however, that Clarence G. Coil just dropped in to say that his copy had arrived that morning so no doubt copies for the other members were also in). A card from Wm. Harder, of Chatham, N. J. (about 30 miles S. W. of New York City), written July 17th, stated that his copy of the June number arrived that day (July 17th).

We are in receipt of letters from two members on the West Coast who happened to mention the date of the arrival of their copies of *Rocks and Minerals*. The member who lives in Bellingham, Wash., received his copy on June 29th; the other member, who lives in Pasadena, Calif., received his on June 23rd. The June issue (for all members) was mailed from the Peekskill post office on June 16th. Thus it took 13 days to reach Bellingham, Wash.; 7 days to reach Pasadena, Calif.; 23 days to reach Colorado Springs, Colo.; and 31 days to reach Chatham, N. J. (about 70 miles from Peekskill).

We took the matter up with our local postmaster who assured us that that issue and all other issues went out of the Peekskill post office on the very day the magazines were brought in. We go to a lot of trouble in preparing the magazines for mailing — sorting the copies out by states and zones — which is not only appreciated by our local post office but it assures a quick dispatch out of Peekskill. As practically all copies of each issue have to go through the New York City post office, the tie-up is, therefore, between New York City and the members' post offices. The chances are strong that the tie-up may be at the local post offices in the cities where members reside. If your post office should be swamped with work, when *Rocks and Minerals* arrive, the magazines may be set aside and allowed to rest for days, possibly weeks, before it is delivered to you. Therefore, when your copy of *Rocks and Minerals* is unusually late in arriving, see your postmaster about it first before sending in your complaint to us — the magazine may be in your post office awaiting delivery.

Rocks and Minerals used to be mailed on the 1st of the month but for a number of months it has been mailed around the 15th. This is due to the fact that our printers have been and still are swamped with government work which naturally has precedence. We hope that before the year is out conditions will become normal again so that *Rocks and Minerals* may be mailed on the 1st as before.

The July issue was mailed on July 14th.

———o———

Rocks and Minerals can use a few articles on mineral localities of Arizona, Pennsylvania, Michigan, Iowa, Missouri, and other states. These must be donated, however.

———o———

Garnets Seven Miles From West Chester, Pa.

Has any reader of *Rocks and Minerals* visited the ridge one mile south of Brinton's quarry where garnets up to one-half inch diameter have been found? This ridge is said to form the left bank of Brandywine Creek and the northwest side of Beaver Creek valley. If so, are the garnets found in a commercial working, or in a rock exposure? Can they be found today without great difficulty?

ROCKS and MINERALS
PUBLISHED MONTHLY

Edited and Published by PETER ZODAC

August 1945

Vol. 20, No. 8

The Official Journal of the ROCKS and MINERALS ASSOCIATION

Whole No. 169

PSEUDOMORPHISM AND ZONAL GROWTH OF GARNETS FROM GARNET HILL, CALIFORNIA

By JOHN N. TRAINER

Fine groups of andradite garnets, some showing interesting zonal growth and pseudomorphs of quartz and epidote after garnet, have come from Garnet Hill, Calaveras County, California. The occurrence has been described as the most extensive and least known garnet locality in the state. It is a knob rising a thousand to fifteen hundred feet between the Mokelumne River and Moore Creek and is a white granite mass, probably near quartz-diorite in composition, which engulfs a sedimentary limestone roof pendant.

Contact metamorphism has resulted in immense quantities of garnet and epidote with disseminated scheelite. Near the apex of the hill are large outcrops of garnet weathered to friable masses in which are occasionally found good crystals but the best specimens are in vugs along a vein which parallels the contact and squarely crosses the apex. As a rule, these vugs are partly or completely filled with quartz which entered after the garnet crystallized and which must be broken away to expose the garnet. There seems to have been a great excess of silica and iron in the solutions, resulting in epidote, andradite and melanite.

The contact crosses Moore Creek to the south and can be seen running up a steep hillside to an elevation of about six thousand feet. It probably has the same minerals in it as Garnet Hill but it has not been worked for the reason that there are plenty of garnets on the Hill.

The garnets are in groups, often large and handsome, medium to dark brown in color (almost black), the best crystals being the darkest; with a luster like black velvet; brown by transmitted light on thin edges; andradite including a small amount of melanite; dodecahedrons modified by trapezohedrons and occasionally by hexoctahedrons. A typical group is pictured in Figure One. The hexoctahedron faces can best be seen at the top of the crystal in the centre but they are on all the crystals. The matrix is solid garnet five inches deep. Some quartz remains between the crystals on the face of the group.

In 1942, the vein on Garnet Hill was opened as a scheelite mine and it was in one of the cuts, along seams and in vugs, that certain specimens showing zonal growth and pseudomorphs were found. Mr. Hatfield Goudy, a mining geologist, procured and sent them to the writer.

The specimen shown in Figure Two is both quartz and epidote pseudomorphic after garnet in one crystal group, the quartz being in the centre at the bottom and the epidote, showing black in the picture, to the right and left. It is about three by four inches, excluding the massive quartz at the top and is roughly a shell built up with zones or layers of quartz, epidote and garnet ranging in thickness from paper thin to one eighth of an inch. Figures Three and Four are a thin cross section cut through the crystal showing about a dozen zones, largely quartz and garnet, in a space of three quarters of an inch. The large number of zones is an unusual feature of the Garnet Hill garnets. The sections, under the mi-

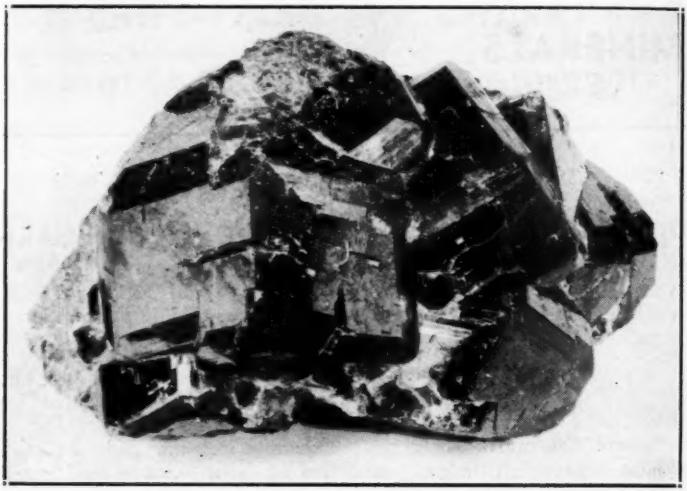


Figure One: Typical group of andradite garnets from Garnet Hill, Calaveras County, California. Actual size 3½ x 5½ inches.

croscope, show the presence of melanite.

Zonal growth in minerals is not unusual but there is very little in the literature about it. It has been noted in biotite, augite, feldspar, hauynite and other minerals. The only references I could find to zoned garnets are in an article by Laszlo Zombory describing and analyzing a Rumanian specimen, in Alfred Johannsen's "Petrography", in Harker's "Metamorphism" and his "Petrology for Students", and in a paper on iridescent garnet from the Adelaide District of Nevada by Earl Ingerson and Julian D. Barksdale.

In the writer's collection of six hundred specimens of garnets, four hundred localities are represented. I can find obviously zoned crystals from only eight localities, or two percent, as follows: Telemark, Norway; Vasko. Rumania; Merida, Venezuela; Lostwithiel, Cornwall, Eng'and; Sulzer, Alaska; Garnet Hill, California: Warren, New Hampshire and Franklin, New Jersey. More might be found by breaking crystals but there is no point in marring good specimens only to learn that perhaps three percent of the localities instead of two have produced zonal growth. More might be found from the many localities not in the collection. There are two specimens from Vasko, Rumania, evidently similar to the specimen analyzed by Zom-

Figure Two: Pseudomorphs of quartz, and epidote after zoned garnet from Garnet Hill. Actual size 3 x 4 inches.

Figure Three: Cross section of specimen shown in Figure Two. The white is quartz and the dark garnet. Crossed Nicols. 3-¼ x.

Figure Four: Same as Figure Three without crossed Nicols 3-¼ x.

bory, in which there is no distinct cleavage or plane of separation as in those mentioned above but an irregular juncture of an outer brown with an inner green garnet; the outer has a higher manganese content than the inner. Both are on a matrix of magnetite. The outer garnet is semi-transparent and shows the inner as a phantom.

As far as this collection is concerned, it is safe to say that zoned garnets are very close to being unusual but it would be unsafe to generalize too positively about a mineral as widespread as this one.

Among these specimens, five are zoned with garnets of the same or slightly different compositions, two are zoned with quartz, one with calcite, one with calcite and garnet, one with fowlerite and garnet and one with quartz and epidote. None have as many zones as the Garnet Hill specimen.

If the zones are of the same garnet, they may be due to arrested development or if of different garnets, or other minerals, to changes in the solutions during their passage through the rock in which the garnet is forming. These changes in the solutions are the best explanation of the zonal growth, although there may be other explanations. Crystal growth is seldom uninterrupted; it usually proceeds by fits and starts.

With the removal of the dark garnet layer from the quartz and epidote as shown in Figure Two, there is exposed a perfectly smooth pseudomorph in the form of a dodecahedron modified by the trapezohedron. The cross sections show successive zones of quartz and epidote with the garnet form. When the garnet zone is removed from the Merida, Venezuela, and Warren, New Hampshire, specimens mentioned above, clean cut pseudomorphic dodecahedrons of quartz are exposed just as when it is removed from one of the specimens from Franklin, New Jersey, a good pseudomorph of calcite is exposed. The pseudomorphs from Garnet Hill and the other localities mentioned above follow faithfully the forms of the outer garnet except the specimen from Telemark, Norway, on which the outer garnet is a clean-cut dodecahedron but the next one (in this case also garnet) is a dodecahedron modified by a trapezohedron. The inner garnet is much darker than the outer, thus indicating a different composition. In other words, both zoning and pseudomorphism appear in the same specimen.

When there are zones of garnets of different compositions and both are clean-cut dodecahedrons, the inner one might well be considered a pseudo of the other one, or vice-versa, but when the zones are of exactly the same material as in the specimen from Sulzer, Alaska, the conclusion might be drawn that the crystals were formed by fits and starts from a solution that did not change; but to call one zone a pseudomorph of another would be stretching the point.

A pseudomorph of quartz after garnet is rare. Calcite, limonite, epidote, vesuvianite, chlorite and other minerals are often found pseudomorphic after garnet. Only three localities in the writer's collection have the quartz; Merida, Venezuela; Warren, New Hampshire; and Garnet Hill, California.

On the bottom and edges the specimen shown in Figure Two, in the cross sections and in other specimens from the same locality, there is corrosion or leaching of the garnet creating vugs or cavities and opening the way for quartz and epidote. This is pseudomorphism by infiltration and is probably the explanation of the Garnet Hill pseudomorph. The cross sections under the microscope show patches of garnet in quartz and of epidote in garnet indicating replacement of garnet by the other minerals. The irregular juncture of the epidote and quartz shown at the bottom of Figure Two indicates simultaneous crystallization.

It is clear that the quartz grow by replacement for, as may be seen in the thin sections, single grains, crystallized units, extend in places across the garnet layers an effect which would not be noted if the quartz represented a mere incrustation whose outlines were determined by the stronger crystallizing force of the garnet. There is a probability that the original material was zoned garnet, which in turn was replaced by epidote

and then by quartz. The epidote may have been replaced in turn, but the distribution of the alteration was surely caused by initial variations in the garnet's composition, with some bands more susceptible to alteration than others, there may have been alternate bands of andradite and melanite.

In the struggle to crystallize between quartz, epidote and garnet, each had its day and place in a zone according to the variations of composition and degrees of saturation of the solutions.

The specimen with zones of fowlerite and garnet mentioned above, from Franklin, New Jersey, is interesting because the fowlerite is the outer zone of the dodecahedron whereas in the other specimens the garnet is the outer zone. Evidently the original material was zones of different kinds of garnets, the top one of which was replaced by fowlerite.

But the Garnet Hill specimen is by far the most interesting of those described in this paper because of the large number of zones and because both quartz and epidote have replaced garnet in one and the same band.

The writer is indebted to Mr. Hatfield Goudy of Yerington, Nevada, for specimens and to Dr. Frederick Pough of the American Museum of Natural History in New York for valuable assistance in preparing this paper.

BIBLIOGRAPHY

The Minerals of California, *California Division of Mines Bulletin No. 113.*

Some Garnet Localities of California by John Melhase, *The Mineralogist,* November 1935.

Petrology for Students, by Alfred Harker.

Metamorphism, by Alfred Harker.

Petrography, Volume I, by Alfred Johannsen.

Garnet Analyses, by Laszlo Zombory, Mat. Termeszettug, Ertesito, Budapest 1934, Vol. 52, pages 179-186 (hung.)—page 187 in German summary — page 83 in Vol. VI of *Min. Abstracts* (Eng.)

Iridescent Garnet, by Ingerson and Barksdale, *Am. Mineralogist,* Vol. 28, May, 1943, page 303.

BERUFJORD, ICELAND

At Berufjord, on the southeastern coast of Iceland, zeolites occur which are considered by many collectors to be among the finest in the world. These zeolites occur in pockets in a low bluff of trap (15 to 40 feet high) which is very much broken up and the ice and frost throws down tons of the rock in the spring — it is from these broken up rocks that the zeolites are collected.

The best specimens are found in dry pockets; most of the pockets have been broken and are filled with mud and red clay which is very hard to clean from the zeolites. Most of the stilbite, however, is found in the clay pockets and stilbite is the most plentiful of all the zeolites. Scolecite is not very plentiful but is of fine quality and hard to get out without breaking the crystals. Quartz is very plentiful and most of the pockets contain nothing but quartz.

Among the minerals found at the locality are:

Apophyllite: In beautiful crystals.

Calcite: Golden yellow crystals associated with the zeolites.

Epistilbite: In white or pink tinted groups of crystals occurring with scolecite.

Heulandite: In beautiful crystals which are either snow-white or tinted pink. Sometimes the crystals are over 3" long.

Mesolite: About the finest specimens of this zeolite (sometimes called needlestone due to its needle-like crystals) are to be found at Berufjord. The crystals are often 2" or more in length, colorless, transparent, and radiate or interlace in a most beautiful way.

Ptilolite: In beautiful white spongy masses.

Quartz: Amethyst, rock crystals, and smoky quartz crystals are found.

Scolecite: White, radiated crystals, sometimes brown stained.

Stilbite: In large groups of white crystals.

Thomsonite: In straw-yellow needle-like crystals.

CORRELATION OF THE FORDHAM GNEISS

By THOMAS W. FLUHR

The Fordham gneiss is the oldest bedrock formation exposed in New York City. It is a grayish rock made up generally of quartz, microcline, and biotite, and usually is well-banded. In some places it is hornblendic, while in others it carries enough mica to make it resemble a schist. A few lenses of metamorphic limestone occur in it.

Most of the geologists who have worked in the metropolitan area consider the Fordham gneiss to be pre-Cambrian in age. This correlation is based, firstly on the absence of fossils, and secondly, on a fancied resemblance to the gneisses which make up the Highlands of the Hudson. The latter, indeed, are pre-Cambrian in age, for at the northern margin of the Highlands the Poughquag quartzite, known to be Cambrian by its fossils, lies unconformably on the eroded surface of the Highlands gneisses.

However the similarity of the Fordham gneiss to the gneisses of the Highlands appears to be based more on the voice of authority and tradition than on fact. No one who has traversed both formations encounters any difficulty in distinguishing between them. There are, as a matter of fact, some very marked differences between them:

1. Graphite occurs frequently in the Highlands gneisses. It occurs only sparingly in the Fordham.

2. Deformation in the Highlands gneisses appears to have taken place at a depth sufficient to render the rock plastic, so that fault displacements frequently are unmarked by crushing or shearing, whereas in the Fordham crushing and shearing are the usual accompaniments of faulting.

3. Igneous intrusions into the Fordham gneiss usually follow the foliation structure. In the Highlands there are many small dikes which cut across the foliation in all directions. Intrusions into the Fordham are usually definitely sill-like in form.

4. Many of the gneisses in the Highlands have been heavily granitized and rendered massive, while in the Fordham such granitization is limited to the immediate vicinity of the intrusives.

5. The granites intruding the Fordham are of a different type and carry a different mineral assemblage from those of the Highlands. The feldspars of the Highlands granites are usually more basic than those which intrude the Fordham.

6. Sulfide minerals, such as pyrrhotite, occur much more abundantly in the Highlands gneisses than in the Fordham, while the iron ore deposito, so abundant in the Highlands, are absent from the Fordham.

7. Infrequently schists resembling the Manhattan schist ooccur within both the Highlands gneisses and the Fordham gneiss. Most of those in the Highlands appear to be mylonites resulting from crushing. Some of those in the Fordham, for example that at Wampus Pond in Westchester County, are undoubtedly mylonites also. Northeast of Millwood however, there is a wide belt of schist within the Fordham formation which may be a remnant of the original sediments, less metamorphosed than usual.

The Fordham gneiss appears to be less metamorphosed than the gneisses of the Highlands, and certainly has not suffered as greatly from igneous intrusions. It displays distinct differences from the gneisses of the Highlands. Grave doubt is cast on the validity of the assumption that the Fordham gneiss is the equivallent of the gneisses of the Highlands. Until considerable research has been done the status of the Fordham in the geologic time scale must be regarded as uncertain.

Editor's Note: Mr. Fluhr, an engineering geologist, and a member of R. & M. A., has made a special study of the rocks of southeastern New York. The Highlands of the Hudson mentioned is the area north of Peekskill, N. Y. We hope you will like his article. Comments will be welcomed.

KILAUEA CRATER, HAWAII

Kilauea Volcano is in the eastern part of the island of Hawaii, the largest of the Hawaiian Islands. The volcano, which is 30 miles southwest of Hilo, a large seaport on the east coast of the island, can be reached by motorbus from the city.

Kilauea is in constant eruption. It has a crater almost 3 miles in diameter (9 miles in circumference), and 1,000 ft. deep; it is the world's largest active volcano.

A hotel, the Volcano House, is near the edge of the crater for the accommodation of visitors where one may stay many days, The air around the creater is heavy with the strong smell of burning sulphur, while the ground is so hot one can feel the heat through his shoes. Cracks in the ground are everywhere and in the crevices white-hot lava may be seen flowing.

The huge crater has walls and a floor of black hardened lava, and in the center of it is a fiery lake of white-hot molten lava a mile in circumference. The natives call this lake "The House of Everlasting Burning".

The almost vertical rim of the crater has rough paths here and there down which adventurous visitors may crawl to the floor below. A guide leads the way as the path is narrow and the floor very treacherous. Once on the floor the visitor follows the guide cautiously towards the fiery lake. The floor is very rough and is also covered with small to huge blocks of rough lava. The floor is even more cracked and creviced than at the top and the sulphur fumes also heavier. The guide stops near the edge of the lake — not too near as the lava often crumbles and would throw one into the fiery mass. From this point the visitor watches the action of the boiling lake. The molten lava in it bubbles and boils and often is thrown high in the air. Masses of lava weighing many tons are thus at times thrown out of the lake and often these fall on the hardened floor. Visitors have to be always on the alert for when a molten mass of lava is thrown out of the lake it is apt to fall among them.

Sometimes the guide presents a souvenir to each member of his party. He will approach cautiously the fiery lake and dip a rod into the molten lava. Some of the lava will adhere to the rod which is withdrawn; then before the lava is cold he knocks it off and presses a coin (generally a cent) into it. This is then set aside to cool after which it is given to a member. He makes as many of them as there are members of his party.

The Kilauea Volcano is now a part of the Hawaiian National Park.

A number of minerals have been found in and around the crater and if our visitor is a collector he should be on the look-out for them. Among the minerals to be found are:

Aphthitalite: Dull white hexagonal plates encrusting lava.

Labradorite: As glassy crystals in the lava.

Mirabilite: As white incrustations on lava.

Olivine: As small greenish glassy pebbles found loose in the area surrounding the crater, in fact they occur right up to the rim.

Sal-Ammoniac: A white incrustation on lava; the variety here contains iron and it becomes yellowish on exposure.

Sulphur: Bright yellow drusy masses on massive sulphur often occur in nice specimens. Some of the sulphur contains selenium and thus becomes Selen-sulphur.

Pele's Hair: A fibrous glass, also known as Peleeite, is an interesting occurrence. It was named after a local goddess.

Pele's Pills: Queer clay concretions, dark brown in color, and known to old Hawaiians as Pele's Pills. Pele was the Goddess of fire and consequently of volcanoes and after a severe eruption — "purging" so to speak — she feels so relieved at ridding herself of her pent up wrath that she flies gleefully from island to island and leaves her pills behind on the banks of fiery lava pits awaiting her next "headache".

MINERAL POLYMERS?

By RONALD L. IVES
Vice-President, R. & M. A.

Somewhat more than a century ago, when the science of chemistry had finally freed itself from the fetters of its predecessor, Alchemy, it was found that the subject could be divided into two fields—inorganic chemistry, which dealt with inanimate compounds; and organic chemistry, which was largely concerned with those compounds related to life processes.

This division continues until today, with some doubt as to the classification of a number of substances. Some chemists feel that the term "organic chemistry" is no longer applicable, and prefer the name "the chemistry of the carbon compounds". This name, although certainly more accurate, may be no longer applicable.

Minerals, being the product of geologic processes, were long thought to be truly inorganic, and the concepts of inorganic chemistry have been used to describe all chemical properties of minerals. This has been successful in most instances, but in recent years, the mineral fuel technicians have found that the concepts of organic, or "carbon", chemistry are more applicable in their specialized field.

In somewhat oversimplified terms, inorganic chemistry is simple chemistry; in which the compounds have formulas such as NaCl; or CaO; in which the valence laws are uncomplicated; and in which the molecules are small. In contrast, organic chemistry is complicated. Organic compounds are likely to have formulas such as:

$C_{20}H_{24}O_2N_2 3H_2O$ (Quinine)

to have complicated valence relations; and to have large molecules. The molecular weight of quinine, for example, is 378.25. In addition, an organic molecule is something like an Erector set — a large number of things can be made from the same parts. Organic compounds are characterized by complex rings and chains; a tendency to form giant molecules; and a tendency to form polymers, having, in many instances, the same molecules as the original compound, but very different mechanical and optical properties. The relatively new science of plastic chemistry is largely concerned with polymerization.

Early in the history of chemistry, it was found that silicon was a close relation of carbon, chemically speaking, and that it would form analogous compounds. Carbon dioxide and quartz are analogous compounds, similar in their chemical construction, although certainly not similar in their physical properties. Carbon dioxide is given the formula CO_2, and the proportions of carbon and oxygen remain the same at all temperatures where the compound can exist. The actual formula of carbon dioxide, however, depends upon various conditions, and under some may be C_8O_{16}. A little experimentation with the formula of quartz indicates that the same molecular conjugations are theoretically possible, although no standard mineralogy text touches upon the subject of giant silica molecules. It is at least theoretically possible to build up a quartz molecule of any size. Determination of the molecular weight of insoluble silicates being extremely difficult, the chemist might have trouble finding out whether he had four molecules of SiO_2 or one molecule of Si_4O_8.

To carry this line of reasoning still farther, so that it reaches a complicated mineralogical problem, carbon dioxide and water combine to form carbonic acid, familiar as the fizz in soda water. Its formula is H_2CO_3. Analogous to this is silicic acid, with a formula H_2SiO_3. This probably seems unfamiliar, but if the formula is rewritten SiO_2H_2O, the general formula for the flint—chert—agate—jasper—chalcedony family of minerals is apparent. The amount and function of the water in this formula is somewhat is dispute.

If the reasoning followed in some organic computations is followed in the case of silicic acid, it can be shown that a large number of molecules of silica can be combined with water molecules in a

variety of ways, each with a stable end product. Further, it can be shown that several of these molecules can be combined, at least theoretically, to produce giant molecules.

That application of organic chemical principles to the silicon compounds is not just a pipe dream is indicated by the successful commercial production of *silicones* —a group of silicon compounds chemically analogous to organic substances. An example of this is silicone oil, which does not thicken in the stratosphere. Many other silicones are already generally known, others will not be publicized until the war is over.

Recent chemical researches indicate that silicon compounds analogous to many "organic" compounds can be manufactured. Theory shows that many more may be produced, and that an even larger number can exist. It is possible to produce, on paper, a giant molecule composed of silicia and water to fit almost any published formula for any on the cryptocrystalline quartz minerals. The chemical similarities of these minerals are well known, as well as are their optical and physical differences. It is entirely possible that the various minerals of this extensive family, all of substantially the same chemical composition, are composed of molecules of different sizes.

Further extension of this line of reasoning may give answers to other problems of mineralogical chemistry, such as the structure of some of the feldspar, and the "bastard" iron sulphides, for some of which formulas such as $Fe_{11}S_{12}$ have been suggested. Before "organic" explanations of mineral structure are accepted, however, no matter how plausible they appear, or how well they fit into theoretical patterns, a vast amount of painstaking experimental work must be done on the subject. New methods of measuring the molecular weight of mineral compounds are badly needed, as are new analyses of some minerals.

Are there chain mineral compounds, giant molecules of Silica, mineral polymers? Theory suggests that there can be; practical science shows that silicon produces some "organic" analogues; final proof awaits the completion of extensive and complicated investigations, many of which have not as yet been started.

Denmark Noted For Flint Pebbles

Denmark is not a mineral country although granite, limestone, and sandstone occur in many sections. But it has one mineral, flint, which is well known to many collectors as huge quantities are exported yearly to many parts of the world. Flint is found as loose, rounded grayish pebbles on the beaches of Denmark; these are used as grinding pebbles for crushing various ores and minerals.

At Bedford, N. Y., Danish flint pebbles are used to crush the feldspar and in time the pebbles, being reduced to small size, are thrown away. At times collectors, new to Bedford, find these pebbles on the dumps and collect them in the belief they are native to the quarry. Once a collector found some banded flint and had them cut and polished under the impression it was agate.

Finest Calcites Occur in England

Beautiful calcites occur all over the world but many collectors believe that the most beautiful specimens known are the slender, limpid crystals which are found in the hematite mines of Egremont and Frizington, in the county of Cumberland, of northern England. Groups of these beautiful crystals are to be found in museums and private collections all over the world.

—o—

A Molybdenite Occurrence in Egypt

Some interesting specimens of molybdenite, as small flakes and hexagonal plates up to an inch across, have been found in quartz veins in granite in the mountains about 100 miles east of Kena and 40 miles west of the Red Sea.

Kena (Keneh, Qena) is a city in eastern Egypt on the east bank of the Nile.

WORLD'S FINEST APATITES AND EPIDOTES OCCUR IN AUSTRIA

The most beautiful crystals of apatite and epidote yet discovered occur in the Knappenwand in the uppermost part of the Untersulzbachtal of western Austria.

The apatite occurs in cavities of an epidote or chlorite schist associated with beautiful crystals of adularia, dark green crystals of epidote, and pale green amphibole asbestos. The apatite is colorless, but sometimes it is green due to inclusions of green asbestos.

The epidote, which is found in magnificient crystals, is dark green in color, transparent, and occurs in cavities of an epidote schist. (Massive and fibrous epidote is also present). The epidote crystals are associated with beautiful crystals of apatite, adularia, asbestos, scheelite, titanite, and drusy calcite. Some of the epidote occurs in fairly large crystals so that it has been cut into gems.

The asbestos (amphibole) is green and hair-like (or finely fibrous) and occurs with apatite and epidote.

The Untersulzbachtal (Untersulzbach Valley) is about 6 miles long. It begins at Sulzau and extends southeast to end at the Untersulzbach glacier. Sulzau is in the western part of Salzburg province. It is located at the junction of the Unter- and Ober-Sulzbachtal which are separated by the Mitterkopf (mountain).

A steep path ascends the Untersulzbachtal (along the left bank of a stream) past a beautiful waterfall 165 ft. high. Along the right bank of this stream is an abandoned copper mine.

Another valley, famous for minerals, is 2½ miles to the east and paralleling the Untersulzbachtal. This valley is the Habachtal and is noted for emeralds.

Knappenwand is a mountain with a large rock wall or face.

Two Copper Mines in Australia

The Wallaroo and Moonta copper mines were discovered in 1860 and 1861, respectively. Although very rich mines, they are found in a flat, soil-covered section of Australia where no outcrops are visible. Their discovery was due to a small burrowing animal, the Australian wombat, (about the size of a pig), which in digging its burrow brought up rich masses of copper ore.

The mines are situated on the shores of Spencer Gulf, at the northwestern end of Yorke Peninsula. 80 miles northwest from Adelaide, a large city on the southern coast (in southeast South Australia).

It was James Boor, a shepherd, who found the mound at the burrow strewn with copper ore and which led to the discovery of the rich orebody now known as the Wallaroo mine; he is remembered in having a shaft named after him.

Patrick Ryan, another shepherd, discovered the Moonta mine; Ryan's Pumping Station was named after him.

The mines produce many interesting minerals such as atacamite, azurite, bornite, chalcopyrite, copper, pyrite, etc.

World's Finest Dioptase Found in Siberia

Dioptase is a rare copper silicate which is found in some copper mines of the world. The finest crystals, of a beautiful emerald-green color, and transparent, occur lining limestone in the copper mines at Mount Altyn Tube in the Khirgis Steppes of western Siberia.

Crystals of dioptase have sometimes been cut for gems but because of its softness (H-5) its use as a gem is limited.

Switzerland Not a Mining Country

Although almost every mineral known is said to occur in Switzerland, it is not a mining country. The geological formations of the country are such that mining is not profitable; so deposits are worked on a small scale only.

Salt (halite) is the chief mineral mined closely followed by iron ore. Asphalt and coal are also mined.

Switzerland is famous, however, for its fine mineral specimens many of which have found their way to America to enrich private and museum collections.

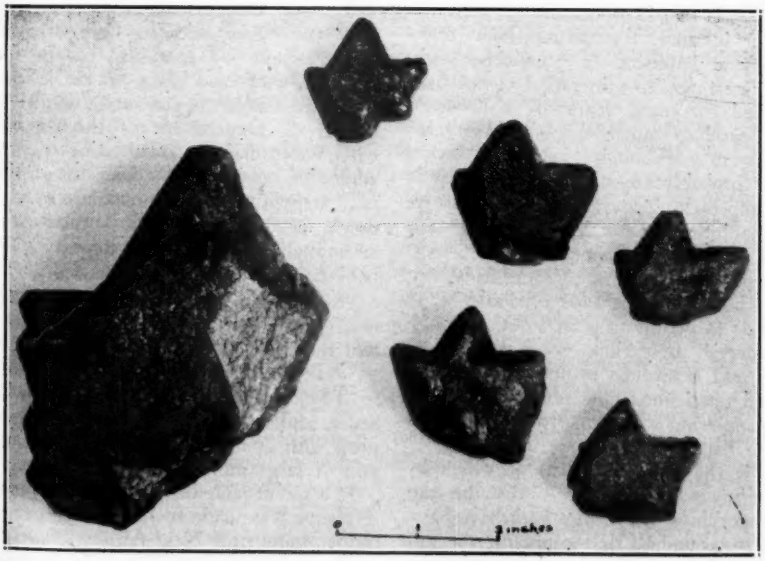
PECULIAR TWINNING IN RUTILE FROM BRAZIL

By CHARLES R. TOOTHAKER, Curator
The Commercial Museum
Philadelphia, Penn.

The economic need for rutile for use in coating on welding rods has increased enormously during this war. Brazil is one of the very important sources of supply. The mineral is obtained commercially as loose pebbles which are picked up on the surface of the ground over a wide area extending for several hundred miles. The deposits run from northeast to southwest one hundred or two hundred miles from the coast, from the State of Parahyba through Ceara and Bahia, as far as the State of Rio de Janeiro. Practically all of the rutile is in waterworn pebbles but occasionally there are fairly well developed crystals up to two or three pounds in weight. Some of these are simple in form but, as we would normally expect, many of them are twinned. The writer has examined a good many tons of commercial material from localities all along the line. A few good sixlings of the wheel type have turned up, but the writer has never seen an eightling from any Brazilian locality.

There is one place not more than one hundred miles from the City of Rio which produces sixlings of a very peculiar habit which is illustrated in the picture. Instead of forming wheels they tend to form stars. This is very evidently only a variant on the wheel with the terminations of the crystal prolonged. Now and then from this same locality one may be fortunate enough to find a star with five points, but I have never seen one with six points. The locality produces, less commonly, some excellent sixlings of the wheel type.

Practically all of the material from Brazilian localities is ilmeno-rutile seemingly an intimate mixture of rutile and ilmenite.



Twinned Rutile Crystals from Brazil

"SEMI-PRECIOUS STONES HAVE BEEN FOUND THERE"!

Contributed

Many are the interesting and fascinating stories published on mineral locations where numerous fine gems have been found. This fact gives cause for a word of warning to those new rockhounds who — entranced and excited over the prospect of finding attractive minerals — are likely to suffer keen disappointment, not to say a waste of time and valuable gas. Enquire before you leave on a quest, should be the watchword!

During recent years there have been extremely few new gem locations discovered, and most happy hunting grounds have had available rock dumps thoroughly combed by experts as well as by hundreds of visiting amateurs. Consequently, little of value can be found today at many locations except by the greatest of luck, unless some mine or quarry has been reopened as the result of war demands.

Rockhounds, unless they are prepared to do exhaustive deep digging, or to take with them a man expert in blasting, should first ascertain how many years since a location was worked commercially, or if it is still in operation.

For instance, the famous New Street quarry at Paterson, N. J., whence came the finest zeolite minerals, has not been worked for many years. A visit would not produce anything but weathered specimens, although splendid crystal gems probably are still deeply hidden in the trap rock. Today, a visit would prove disappointing. Let's hope that one day soon it will be reopened.

Even the nearby Vandermade, or Sowerbutt, quarry at Prospect Park, N. J., appears to becoming played out, although commercial operations are as active as ever, and regardless of the fact that enforced restrictions now prevent collectors from entering the property legally. It is police patrolled!

It is the writer's theory — which by no means makes it a fact — that the trap rock workings in Prospect Park have passed across one-half of the area of the upper part of a volcanic pipe, and now blasting and digging have reached the outer edges where the minerals thin out. The other half of the pipe is not worked because the adjacent residents object to blasting. The quarry operators do not dig downwards because of the water drainage problem. Compared with a few years ago, the amethysts, heulandites, calcite crystals, prehnite and other zeolite crystals are no longer of very high quality, and certainly do not come out in the same volume after weekly blasts.

The writer has read dozens of books and articles on mineral locations in New York, New Jersey, Pennsylvania, California, and Nevada; has visited hundreds of places where fine gems "have been found", only to suffer considerable disappointment on many occasions, where mines or quarries have not recently been worked. These remarks are not intended to discourage rock hunters; but rather to ensure that they will not go blindly to locations where only weathered stones exist on the surface, unless they are adequately equipped to dig deeply.

Disappointing Localities in Pennsylvania

Having to be in West Chester, Pa., district on business recently, the writer took the opportunity to visit Brinton's quarry where — according to the fine geologic work and maps on the Coatesville and Chester quadrangles issued by the U. S. Department of the Interior, beryl, tourmaline, amethystine quartz, aragonite, apatite, jefferisite, magnetite, talc, serpentine, tremolite, asbestos, ripidolite, saprolite, deweylite, chromite and anthophyllite 'have been found'. The book terms it a collector's paradise'.

He found exactly nothing except very much weathered serpentine, and estimates that there can have been no workings for 25 years, at least. The book was issued in 1942. The quarry has filled with water, and is now a swimming hole complete with diving board. This also can be said of large numbers of old quarries.

In a recent issue of *Rocks and Minerals* reference was made to the old Carpenter copper mine near New Albany, Pa., and another mine nearby. The writer has just visited both mines in company with a

local resident who in past years had mining experiences. Both had ceased operations when he was a boy. They were tied up through litigation after a little work had been done. Without a guide it would be extremely difficult to find either mine, as they are on the sides of two creeks up small canyons. Even my guide had a little difficulty in finding one of them. They are really little more than glory holes.

After considerable hammering and rock smashing we found — yes, plenty of malachite-stained material and a couple of small pieces of rough malachite. We did not find anything which would make an attractive cabinet specimen.

Franklin, N. J., Closed to Collectors

The most famous of all "has been found" mineral locations in the East, is Franklin Furnace, N. J., where 148 different minerals have been discovered. The Franklin and Ogdensburg mines are still actively worked, but are closed to collectors because of wartime restrictions; but some good fluorescent material can still be found in the old dumps if you uncover them. At the mines the minerals are sorted under ultra-violet light, and all discarded rocks are thrown down disused mine shafts, so no new dumps are being formed for today's collectors.

A FIELD TRIP TO THE LINK SAND PITS OF BALTIMORE COUNTY, MD.

Vernon J. Miller, 2120 Wilhelm Street, Baltimore 23, Md.
Leo R. Sirota, 2120 W. Pratt Street, Baltimore 23, Md.

Two high school boys, both 16 years old, and both members of the R. & M. A., visit an interesting locality just over the Baltimore city line.

On June 21st, 1945, to celebrate the closing of school, we "Rockhounds" hiked to the Link Sand Pits in quest of fossilized woods. The handbook, *Minerals of Maryland*, describes them and the locality as follows:[1]

"The sand pits are found on the north side of the Baltimore to Washington Boulevard. Several hundred yards west of the Sulphur Springs Road there is a large opening which covers much of the surrounding area, and affords a splendid example of the Lower Cretaceous deposit. In cross section on the walls of the opening, beautiful banding is observed in varying shades of red, brown, white and yellow, caused by the deposition of hematite and limonite in the sand.

"The minerals in the pit and vicinity are red ochre, silicified wood, kaolinite, limonite replacing wood, hematite, limonite, marcasite, varied colored quartz pebbles, and fossil cycad stumps."

We left our homes at 8:15 a.m. and arrived at our destination at about 10:00 a.m. where we got down quickly to work. In several minutes our first specimen of fossilized wood was found, and from then on, hardly a moment passed without something being turned up. After some time, we finally gathered up our specimens and started on the long, hard way back.

We found a large number of pieces of fossilized wood, including two very fine large specimens. The wood was found in both hematite and limonite. All the specimens showed the grain very well. One small specimen contained a fossilized seed. High grade hematite, some nice limonite, and several small limonite concretions were also found.

We arrived home quite tired but felt well rewarded for our efforts on our small but successful field trip.

---

1 *Minerals of Maryland*, by Charles W. Ostrander and Walter E. Price, Jr. Published by the Natural History Society of Maryland, Baltimore, Md., 1940, p. 19.

SOME NOTES ON ALASKA

By J. H. WANDVE
Box 2332, Ketchikan, Alaska

In the hope that readers of *Rocks and Minerals* might be interested to hear a few words about collecting in far away Alaska, this little article has been written.

To introduce myself, I have three occupations which keep me busy all the time. I make my living by fishing for King Salmon, the kind used for smoking. Next I collect rare-tone wood for violin bodies or soundboards; this started as a hobby but is now developing into a small business as it was found that the Alaska spruce I select is superior to any other spruce for violin tops. The third occupation is the study of minerals and prospecting whenever opportunity affords; this is only a hobby so far.

Not long ago I went out fishing one morning but found the sea too rough and so came to shore where I tied up alongside my old friend from Petersburg. Since we could do no fishing, he suggested that we make a trip to one of the gold mines a few miles away. I agreed to go with him, and in a few moments the chrysler engine in my boat started roaring and we were off on our way through a chain of beautiful islands and inside passages that were away from the rough sea.

On the way my friend pointed out where the famous Chicagof mine was. He told me that many years ago he and two partners had staked out a group of claims on the extension of the Chicagof vein but on the other side of the mountain. (A large fissure vein goes through the mountain). They kept up the assessment work for some time but finally his two partners got tired of doing this and the claims were given up. Shortly afterwards a Finn relocated the claims and later sold them to the Chicagof mining company for $300,000. (The Chicagof gold mine is one of the 15 richest gold mines for its size in the world).

We kept on our journey and soon came to another mine, called the Hirst-Chicagof. Here we stopped, tied up our boat at the dock, and went ashore to look around. I, immediately, went for the dump to see if any minerals could be found for my collection but was astonished to see nothing but bull quartz and slate. The only mineral of interest to be seen around the mine was a small pile of smooth flint pebbles that had been used in the grinding mill to crush the gold-bearing ore. These discarded pebbles had come from Denmark, and as some had nice patterns in them we collected a few. One of my pebbles has an outline of a flag with a white dot in the lower side and if it were tinted it would resemble the setting sun of the Japanese flag.

We proceeded a few miles further where we visited an old man living alone in a log cabin which we found very nice and clean. The man was a Norwegian, 6 ft. 4 inches tall, and was very nice to us. But why he should live in such a place and alone I do not know; I understand he has a daughter in California who is in very favorable circumstances.

This man, learning of our interest in minerals pulled out an old tin can containing some high-grade concentrates and a few quartz specimens studded with gold. The concentrates were some decomposed pyrite crystals with lots of visible gold; such material would assay thousands of dollars to the ton. He told us that he had found the tin can standing on a stump a few miles from his cabin where there had been some campers who had a tent pitched there. He doesn't know who the party were nor what they had been doing there but when they left the can was overlooked. On leaving, I picked up a piece of rock from the beach below the cabin and later examination showed it was nickel-bearing; apparently there is a nickel mine near or on his homestead.

I am very favorably impressed with this section of Alaska and am prospecting the area at every opportunity. I have found good deposits of zinc and manganese and many nice minerals. I only

(*Continued on page 380*)

GOLD IN THE FIJI ISLANDS

By PFC. FLOYD R. JOHNSON

On Viti Levu Island, in the Fiji Islands, wire gold was found loose on top of the ground about one mile from the village of Vata Kola (5 miles south of Tavua). The soil in this area contained a lot of light colored red clay and wire gold would be found in this clay also. The gold wires would run from small particles up to an inch in length, and were thread or hair-like in appearance.

At the head of the Singatoka River, which is 50 miles long, flows south and cuts the island approximately in half, the stream runs through basalt rock. Gold was found here, too, but not in enough quantity to pay to mine it.

Tavua near the north coast of the island, is Viti Levu's most important goldfield. The mines are open cuts; the gold-bearing rock is crushed and put through a mill from which twice a year the gold is removed. Wire gold occurs also in this field.

Germanite at Tsumeb, S. W. Africa

About 1922 a new germanium mineral was found in the copper mines at Tsumeb, S. W. Africa. It is massive, hardness 4, and of a peculiar dark reddish-gray color, somewhat resembling luzonite or bornite. It is a sulfide of copper and germanium, with iron, zinc, gallium. and arsenic. Germanite is associated chiefly with tennantite and pyrite and to some extent with enargite, galena, and sphalerite.

The name, of course, is due to its germanium content (about 8%). This is a rare mineral and seldom seen in collections.

Tsumeb is in the northern part of S. W. Africa.

Famous New Jersey Quarry Abandoned

The famous New Street quarry, on New Street, Paterson, N. J., has been abandoned for over 10 years and from all appearances it may be shut down for ever. The area around the qaurry has been built up during the years and the property owners have made so many protests against quarrying operations that the quarry has been forced to close.

The New Street quarry, whose rock is basalt and was used as crushed stone, is world-famous for its large array of beautiful minerals among which are analcite, apophyllite, calcite, chabazite, datolite, heulandite, pectolite, prehnite, stilbite, etc., etc.

A few years ago the locality for this quarry was said to be West Paterson.

Molybdenite in French Morocco

French Morocco is the largest producer of molybdenite in Africa and most of the product comes from the Societe de Molybdene mine near Azegour.

The molybdenite occurs in bands of garnet rock with diopside, chlorite, and vesuvianite in crystalline limestone near a granite contact, and is found in sizes varying from small flakes up to sheets 3 feet across. Arsenopyrite, galena, hematite, pyrite, and pyrrhotite are also associated with the molybdenite.

Azegour is 80 kilometers (50 miles) south of Marrakech (Morocco City) the largest city and southern capital of Morocco.

The Rand, World's Richest Gold Field

The world's richest gold field is the Rand District of South Africa, where the annual production is half of the world production. The field is about 50 miles long (east and west), from 2 to 25 miles wide, and contains some of the world's deepest mines. The city of Johannesburg lies astride the central part of the mined area.

Gold in the Rand, or to give its full name, Witwatersrand, was discovered in 1885 and since that time the growth of the area has been phenomenal.

The name Witwatersrand means, the "Ridge of White Waters", and is derived from a series of low white ridges which bound, on the north, the west and central portions of the field.

S/SGT. DELBERT BEN CARR

March 26, 1924 — March 24, 1945

It is wih much sorrow that we announce the death on March 24, 1945, of S/Sgt. Delbert Ben Carr who was killed in action in the Rhine crossing operations at Wesel, Germany. Sgt. Carr's B-24 Liberator Bomber, while flying at extremely low altitude, giving close support to the ground forces, sustained damage from enemy antiaircraft fire and crashed in enemy territory. It was his 23rd mission.

Sgt. Carr was a true Christian and a brave soldier. In a recent letter to his mother he wrote, "I cannot tell you anything about our missions, but the Good Lord rides with us each time, and each time we get back we know it is only through His will. I have a clear conscience and lots of faith so don't worry too much about me. — Over here we feel God's presence so much more passionately, more fervently. These are not just the words I want, but it is an attempt to express the way I feel."

Sgt. Carr, son of Mr. and Mrs. Delbert Carr, 1530 Corson St., Pasadena, Calif., was born in Los Angeles, Calif., on March 26, 1924. His death occurred just two days before his 21st birthday.

Sgt. Carr's interest in nature was indicated at an early age. As a small boy he was always bringing home pockets full of pretty stones and shells. He seemed to be a "born collector". At the beginning of his ninth grade in school he had definitely decided to be a geologist.

He was a senior at Pasadena Junior College when he enlisted in the air corps in March, 1943. He had looked forward to finishing his last two years at Stanford University, a hope that now can never be fulfilled.

His awakening to a deep and earnest interest in minerals came through his study of mineralogy under the direction of Mr. H. Stanton Hill, of Pasadena Junior College. A letter from Mr. Hill reads, "Ben was one of my most enthusiastic mineralogy students and was one of the few who were able to maintain

S/Sgt. Delbert Ben Carr

their mineralogical interests after joining the armed forces. He made it a point to visit museums, dealers, and collectors in the vicinity of his various posts and it kept me busy looking up the mineral side of each station and forwarding suggestions, which were always carried out when at all practical to do so. Ben did not really begin collecting seriously until about six months before entering the army. At the time of his death his collection numbered 700-800 specimens, some of which he never saw as he ordered many from catalogs and advertisements and had them sent to his home. He would have had a grand time on his furloughs opening boxes of minerals.

"He was a member of the Rocks and

Minerals Association, the Dana Club of Pasadena Junior College, and the Mineralogical Society of America.

"Perhaps Ben's greatest triumph was in the fine, clean life that he led. It is not often that one comes across a boy with ideals and character on the high plain which Ben had chosen."

Sgt. Carr loved *Rocks and Minerals* as much as he loved his beautiful mineral collection but he would not have the magazine sent him overseas for fear a copy might get lost. So each month his mother would copy all the articles she thought he would most enjoy and send them to him by airmail. He especially enjoyed the story about Cpl. Howard's visit with Mr. Palumbo in Rome, Italy, which appeared in the February 1945, issue, and hoped also to duplicate the visit but this hope did not materialize.

Besides his parents, Sgt. Carr is survived by an older sister, Irene Carr Otto, a brother, Arthur, age 13, and a sister, Carolyn, age 11. In the death of Sgt. Carr, mineralogy has lost a keen and conscientious student, one who had a brilliant future ahead of him. To his parents, brother, and sisters, the Rocks and Minerals Association extends its deepest sympathy and joins with them in mourning the loss not only of a dear son and brother but a warm friend of our organization.

So far as we know, Sgt. Carr is the first member of the Rocks and Minerals Association to lose his life as a member of our armed forces.

PETER ZODAC

MAGNETITE SAND ON BOUGAINVILLE

By PFC. FLOYD R. JOHNSON

There is a lot of magnetite sand on Bougainville Island, most of it is on the beaches but a lot can be found inland. There are spots where I have seen the sand 8 inches deep and a mile long. Most of it is about 1½ miles north of the Numa Numa River, in the northeastern part of the island.

Some of the soldiers panned gold from the Numa Numa River, more or less for a keep-sake; the gold occurred in flake form. This panning was done about 5 miles inland from the mouth of the river. The river is very clear—no mud or sand, but mostly gravel, is to be seen.

Bougainville, the largest of the Solomon Islands, is a volcanic island, and a lot of volcanic rock and volcanic ash, as well as many other rocks, are to be seen.

A TRIP TO SAIPAN

By ENSIGN ROBERT F. MONOHON, U.S.N.R.

So far in my travels I have visited Guadacanal, Saipan, and Okinawa Islands. The only one I have set foot on has been Saipan. There are a number of quarries on Saipan that are worked by our Seabees for road and airstrip building material. These are huge workings and there are many of them. These quarries are called "coral pits" by the personnel on the island. The rock varies from a dead white chalky type to a very hard pink or salmon-colored coral limestone.. The harder type is always covered on one or more sides by drusy quartz of clear to yellowish color. I found one piece that was coated about six inches thick and clear enough in spots to be called transparent. This drusy quartz could develop because of the numerous small openings and interlaced apertures in the coral rock.

Quartz is the only mineral, aside from iron stains on rocks, that I could see. All exposed workings were quickly covered with a yellowish film because of the high iron content of the water.

The trip to the quarries was most interesting because of the scale of work being done, and, as a newcomer to mineralogy, I never before saw a quarry actually being worked. Those Seabees could really set off a blast!

"ME AND PA." TWO OLD ROCKHOUNDS.

Dear Editor:

It seems that we are just about the same as any family that have a habit of picking up every rock they run across and dampening it, in whatever way is most convenient, to be better able to note its color and the probable chance of making a decent specimen of it. Now that we are confined within such a short radius of home we keep rocks planted about the house, on the mantel, on the radio, in the windows, on the center table and any other place we may find room for the specimen we happen to finish studying.

"Sure thing", Pa spoke up. He had been reading over my shoulder which, if I do say it, is rather forward, and he added, "and it was not until we visited the Armstrongs and the Rogers at the meetings of our club that you quit harping about the way I littered up the place. You found that they are also human and don't draw the line about placing a nice specimen wherever they take the notion. Now just that little idea makes the hobby of so much more pleasure; though they also have cabinets for their collections it sure makes one feel more at home to be able to include a beautiful specimen with the rest of the furniture around the house without someone objecting."

After Pa had settled down with his nose buried in a map, I noticed a gleam of pleasure lingering around his eyes, as if he had again proved he had been in the right. I had no comeback because I have learned that, for once, he was right.

With a little chuckle (he was feeling gay after that conviction) he burst out gaily.

" 'Sfunny, every time I look at the map and see that word, 'Llagas', I think of that piece of orbicular jasper found in that creek, about a mile south of the town of Morgan Hill, Santa Clara Co., Calif., on 101 Highway and recall the surprise I had in something I learned about mud sawing. I cut three slabs from that piece which averaged 10 inches to the cut at average speed of 55 minutes. The saw was about 12½ inches in diameter. I expected the saw to get a flat most anytime but the wonder grew as the days passed and still no flat. The saw wore down to less than seven inches in size before a flat came and that was caused by a rock slipping from my hand while one was being cut in the holder. This saw was getting no more care than I had always given other saws but no one could ever induce me to use a 20 or 22 gauge metal for a saw again, as had been recommended. Because I had no metal of the heft I had been accustomed to using, I had to use the hack saw in order to cut out a piece from some 18 gauge.

"To make it simple it is this, by using a thick saw the extreme edge never gets so thin that it becomes delicate, therefore it never turns down on the edge making a flat. By keeping the saw immersed at least an inch in the mix and brushing some on the side to give it clearance, it makes a perfect cut and in the long run there is not so much waste where no cuts are spoiled and no heavy grinding from poorly made cuts."

With that final explanation, Pa moved his specks back from their precarious position on the end of his nose and stuck that member back into his road map to continue his dreams of the past and those he is planning for the future.

Sometimes Pa has good information for other Rockhounds and if I am paying any attention to him I will jot it down and then you will hear from me.

Your truly,
Me, of the Two old Rockhounds.

Editor's Note: This is the first of a series of short articles prepared by one of our California members in which some valuable information will be given on minerals, especially their cutting and polishing. We hope you will like these articles.

Chalcopyrite in Utah

Chalcopyrite is the most abundant copper mineral in Utah and occurs in many mining districts of the state. Unusually fine crystals have been found in the Cactus copper mine. San Francisco district, in north central Beaver County of S. W. Utah.

Club and Society Notes

Marquette Geologists Association, Chicago, Illinois

The Field Trip

The field trip to the "Badlands of Illinois" (the Mazon Creek-Wilmington strip mines region) for fossil ferns and giant club mosses of the Pennsylvania Period, was held, as scheduled, on June 17th, 1945. The caravan left the home of our president, Steve Norvell, Western Springs, at 8:30 A.M. It was a nice morning; the sun was shining through a scattering of clouds. By the time we were ten miles south of Plainfield, however, dark clouds rolled over the sun and that was the last we saw of it. Three or four times during the day a few drops of rain fell. Each time we thought "This is the end of the field-trip", but just as often, the rain blew away, so that at no time was collecting interrupted. In fact, collecting hit a high pace right from the start and continued fast and furious until the last car started for home about six o'clock. Even at lunch, eaten by the road-side, the talk was of nothing but petrified ferns, neuropteras, cyclopteras, annularias, calamites ,etc. Everyone fished out his or her best finds of the morning and laid them out for others to see.

All brought home more fossils than they intended. Even those who had planned to bring only a dozen "extra good ones", wound up the day with ten or fifteen pounds. Some brought back as much as 75 pounds. Certainly, no one was disappointed. Many very fine specimens were found and several rare species. Every "tripper" added at least one real prize to his or her fossil collection. It was voted a swell trip by all members and friends who attended.

P. S. Not one single thumb was hit with a hammer while cracking open the concretions. That is a record.)

Mineralogical Society of the District of Columbia

A field trip was held on July 15, 1945, to Marriottsville, Md., (northwest of Baltimore and on the Potapsco River), where the Clinchfield Sand and Feldspar Co's quarries were visited. The quarries are noted for soapstone, talc, amphibole, limonite pseudo pyrite, chlorite, quartz, etc.

New Jersey Mineralogical Society

The following officers were elected for 1945-1946:

President—Mr. Joseph D'Agostino
1st Vice-President—Dr. S. S. Cole
2nd Vice-President—Mr. H. E. Millson
Secretary—Mr. G. R. Stilwell
Treasurer—Miss Edna Hensel

The Society meets at the Public Library, Plainfield, N. J.

Queens Mineral Society

A meeting of the Society was held on July 5, 1945, at its headquarters in Richmond Hill, N. Y. It was called to order at 8:30 p.m. There were 14 members and guests present.

The program committee announced that they had arranged topics as far ahead as December.

Mr. Koeber suggested a talk on garnets for our September meeting. Mr. Maynard was selected to take over this lecture. Miss Grothen was selected to delve into the historical field of this topic.

Mrs. Marcin reported on the trip to Rutgers University. It was suggested that the Secretary write to the Curator of the Geological Museum of the University in regards to the trip on August 5th.

The speakers of the evenings were Mrs. B. Marcin (Map Reading), Mr. Otto Trautz (Oriented Crystallography), and Mr. C. Segeler (Isomorphism).

The meeting adjourned at 10:30 p.m.

Respectfully submitted
T. Fredericks, Secretary
473 Harmon St.
Brooklyn, N. Y.

Boston Mineral Club

At the July 10, 1945, meeting of the Club, the main feature were talks by Messrs. Rudolf Bartsch, Gunnar Bjareby, H. T. Evans, and others on the mineral localities of Alstead, N. H. The Club meets at the New England Museum of Natural History, Boston, Mass.

Paterson Mineralogical Society

The 6th meeting of the Society was held on June 14, 1945, at the Paterson Museum, Paterson, N. J. The subject of the meeting was a discussion on mineral localities within a radius of 100 miles.

Mineralogical Society of Southern California

A meeting was held on July 9, 1945, in conjunction with the evening class in mineralogy from the Pasadena Junior College at the Public Library, Pasadena, Calif. The subject for the meeting was Gems.

Northern California Mineral Society

The following activities of the Society took place during July 1945:

July 11th—Micro mount meeting.
July 13th—Business meeting.
July 18th—General meeting at the Public Library, San Francisco, Calif.
July 27th—Laboratory night.

At the general meeting, Dr. Austin F. Rogers, Professor of Mineralogy, Stanford University, was the speaker whose subject was "The Romance of Jade", illustrated with Kodachrome slides.

Texas Mineral Society

The Texas Mineral Society of Dallas, Texas, held its annual election of officers; the following were elected:

President—Mr. Raymond C. McIver
Vice-President—Mr. J. D. Churchill
Secretary-Treasurer—Mr. A. O. Phipps
Directors—Mrs. Wm. LaDew
Mrs. J. D. Churchill
Dr. L. A. Nelson

The program of the meeting was two-fold in purpose, regular business, and the purchase of specimens. Several boxes of minerals had been submitted by various dealers and each specimen was offered to the highest bidder.

A. O. Phipps, Sec.
2727 W. Brooklyn
Dallas 11, Texas.

Pacific Mineral Society

At the July 17, 1945, meeting of the Society, Harold Eales was the speaker whose subject was "How to learn minerals by collecting".

The second part of the meeting was devoted to honoring Mrs. W. Scott Lewis, who, with her husband, have contributed greatly to the Society.

The Society meets at the Asbury Apt. Hotel, in Los Angeles, Calif.

State Mineral Society of Texas

Although no meeting was held in July, the Society issued for the month an interesting *News Letter* which was distributed among its large membership. Mrs. Viola Block, 829 W. Jefferson, Dallas 8, Texas, is Secretary of the Society.

. . . With Our Dealers . . .

Selected mineral specimens have been set aside this month by Schortmann's Minerals, of Easthampton, Mass.

Ward's Natural Science Est., of Rochester, N. Y., offer to mineral collectors desirable specimens of many kinds. They have coming, also, a large shipment of choice Brazilian minerals.

The Cliff's Agate Shop, of Riverton, Wyo., is also a new advertiser this month. Its offering consists of red and gray banded Brazilian agates.

Note the fluorescent minerals advertised this month by A. L. Jarvis, of Watsonville, Calif.

A new advertiser this month is Jack Natteford, of Los Angeles, Calif., who features colorful Mexican onyx and collections of Mexican minerals.

Cutters! Note the attractive features of the Toledo Variable Speed Transmission! The Keweenaw Agate Shop, of Ahmeek, Mich., is the distributor of it. This new firm also carries in stock large quantities of choice minerals from the Copper Country of its state.

Another new advertiser this month are the Sangers of Chicago, Ill. They have some choice gem material from Brazil.

Everybody likes opal and the West Coast Mineral Co., of La Habra, Calif., has some nice material in stock.

Want some Death Valley minerals? Roberts & Stevens, of Monterey Park, Calif., can supply them.

James W. Riley, of Springfield, Ohio, has some August specials in this issue. Look them up!

Another list of fine specimens is listed this month by the Wiener Mineral Co., of Tucson, Ariz.

The Western Mineral Exchange, of Seattle, Wash., has in stock a large supply of lapidary equipment and choice cutting material.

Grinding wheels, drum sanders and other lapidary equipment are always in stock at Warner & Grieger, of Pasadena, Cailf.

Want an Arkansas diamond mine collection? See the ad of the Ozark Biological Laboratories, of Hot Springs National Park, Ark.

W. T. Rogers, of Salt Lake City, Utah, has some nice pyrite groups, also chalcanthite.

One more new advertiser appears in this issue and he is John L. James, of Tonopah, Nev. His ad features cutting material, also polished petrified wood and agate slabs.

Pennsylvania's Highest Mountain

Negro Mountain, 3213 ft. high, is the highest mountain in Pennsylvania. Its rocks are chiefly quartz conglomerate and red shale.

The mountain is about 5 miles southwest of Garrett in southern Somerset County, in the southwestern part of the state.

BIBLIOGRAPHICAL NOTES

Sillimanite and Massive Kyanite in Georgia, by A. S. Furcron and Kefton H. Teague.

The report announces the discovery in Georgia of two economically-important refractory minerals in commercial quantities. 76 pp., 19 figs., 3 maps.

Issued by the Georgia Division of Mines, Mining and Geology, Atlanta, Ga., (1945).

Common Rocks and Minerals of Missouri, by W. D. Keller, Ph.D.

Although this bulletin has been prepared especially for Missourians who want to know what are the common rocks and minerals of their state, it is, nevertheless, of great interest to collectors regardless in what state or country they may live. Localities are given in many instances where interesting minerals occur, and the illustrations are very good. 78 pp., 55 illus.

Issued by the University of Missouri, Columbia, Mo. (Feb. 1945).

Report of the State Geologist of Vermont, 1943-1944. (Elbridge C. Jacobs, State Geologist).

The report is devoted largely to the Vermont Copper Company's mine and operations at South Strafford. 41 pp., 5 pls., 1 geologic map.

Issued by the Vermont Geological Survey, Burlington, Vt. (1945).

Mica, by R. S. Matheson, B.Sc.

An interesting report on deposits of mica in Western Australia, 75 pp., 8 plans, 3 figs.

Issued by the Department of Mines, Perth, W. Australia, as Bull. No. 2 (1944).

Lithology of the Sea Floor off Southern California, by K. O. Emery and F. P. Shepard.

In 1938 a program of geologic investigations of the sea floor bordering California was carried on in the schooner E. W. Scripps under the direction of Mr. Shepard. Many rock samples were obtained and these and other collections from the same area were studied to form the basis for this report.

Published by the Geological Society of America in their bulletin Vol. 56, April 1945, pp. 432-477, 3 pls., 1 fig.

Mineral Occurrences in the Renfrew Area, by J. Satterly.

The Renfrew area of Ontario, Canada, has long been famous for the variety of its minerals, and some occurrences in the past have been worked solely for the recovery of museum specimens. 139 pp., 17 illus., 2 maps.

Issued by the Ontario Department of Mines, Toronto, Ont., Canada (1945) as Vol. LIII, Part 3, 1944.

Potash Salts from the Texas-New Mexico Polyhalite Deposits, by John E. Conley and Everett P. Partridge.

The report covers commercial possibilities, proposed technology, and pertinent salt-solution equilibria. 251 pp., 62 figs.

Issued by the U. S. Bureau of Mines as Bull. 459 and for sale by the Supt. of Documents, Gov't. Printing Office, Washington, D. C. (price not given).

THE STRATIGRAPHY OF SOME LOWER ORDOVICIAN FORMATION OF THE OZARK UPLIFT, by James S. Cullison, School of Mines and Metallurgy, University of Missouri, Bull. Tech. Ser., Vol. XV, No. 2, June 1944, 112 pages, 12 halftones plates, 12 collotype plates and 10 folded line plates in pocket. (Mailed free upon request).

This bulletin describes the stratigraphic relationship and faunal content of a series of strata formerly known as the Jefferson City Cotter and Powell formations. The author has subdivided the lower part of the section into two separate formations and changed the status of the Jefferson City from a formation to a group.

Science the Endless Frontier.

A report to the President of the United States on a Postwar Scientific Research by Vannevar Bush, Director of the Office of Scientific Research and Development, July 1945. 184 pp.

Issued by the Office of Scientific Research and Development, 1530 P St., N. W., Washington 25, D. C.

Cobalt in French Morocco

Cobalt occurs in the Anti-Atlas Mts. of southern Morocco at Bou-Azzer, about 180 kilometers (112 miles) southeast of Marrakech. The chief ore is skutterudite, associated with safflorite and lollingite. Erythrite, the peach-red hydrous cobalt arsenate, is found on the surface of the deposits. The ore in places carries considerable gold.

Skutterudite is a cobalt-nickel arsenide occurring in metallic gray masses; safflorite is a tin-white cobalt diarsenide, and lollingite is a steel-gray iron diarsenide.

Marrakech, largest city and southern capital of Morocco, is sometimes called Morocco City.

WITH OUR MEMBERS

H. S. Keithley wishes to announce a change in his address, from 808 W. Washington to P.O. Box 902, Phoenix, Ariz.

Captain William J. Bingham, who has been discharged from the U. S. Army, has reopened his lapidary shop at 2100 Arcade St., St. Paul 6, Minn.

W. H. Marshall, of Fort Collins, Colo., is in the navy and is stationed on New Caledonia. Somebody told him that opal could be found on the island and he is looking for it — during his spare time of course.

R. Emmet Doherty, of Wilkes-Barre, Penn., just got back from a visit to Hot Springs, Little Rock, and Magnet Cove, Ark. How many minerals he collected we do not know but someday we will ask Mrs. Doherty about it — she was with him.

Captain Carl H. Klein, of Hudson, N. Y., while stationed at Camp Smith, near Peekskill, N. Y., visited the deLuca emery mine, also near Peekskill, where he collected some nice corundum crystals (in emery).

Oscar W. Bodelsen, of Mt. Kisco, N. Y., our good looking president, specializes in silver minerals and is always on the alert to add new ones to his large collection. We wonder if anyone else specializes in silver minerals!

C. H. Robinson, of Washington, D. C., who is also president of the Mineralogical Society of the District of Columbia, is a lucky collector. On a visit to the gold mine at Great Falls, Md., June 24, 1945, he panned some of the "dirt" from the dump and recovered — not gold, not a crystal or interesting pebble, but a polished bluish opal cabochon! We know that common opal occurs in Maryland but Mexican opal occurs only in Mexico and this, we believe, is what Mr. Robinson found.

Richard M. Pearl, who spent over six months in the East, has returned to his home in Denver, Colo.

One of the Association's most active supporters is Wm. C. Chandler, of San Jose, Calif. So far this year he has obtained seven new members for us.

Harry C. Grahl, of New York City, has a lot of sand! And is he proud of it! Why he specializes in it — and has material from all over the world — even from the Galapagos Islands (how did he ever get sand from there?) At any rate he has many friends in the armed forces who send him sands from foreign lands. It must be nice to have a lot of sand!

Sgt. George Molnar, of Perth Amboy, N. J., is in Panama and has been making quite a survey of the country's mineral occurrences. One of his trips, which we believe he may have sponsored, was to a jungle stream containing gold, and the party consisted of 45 soldiers and one blonde. Sgt. Molnar covered himself with so much glory during panning operations — he found the most gold — that *The Panama American*, in one of its issues, gave the trip quite a write-up in general and Sgt. Molnar in particular. "Pie-Pan wielders find gold in rush to Panama diggin's", was the caption of the two column write-up. Incidently Sgt. Molnar has sent your secretary a number of specimens from Panama and one of these days an article on them will appear in *Rocks and Minerals*.

T. Orchard Lisle, formerly of San Francisco, Calif., is now stationed in New York City, where he has been appointed Eastern Editor and Business Representative of the West Coast industrial publications of James S. Hines, San Francisco, namely: *Pacific Marine Review and Western Machinery and Steel World*, operating out of the New York office.

Romania 4th Largest Oil Country

Romania is the 4th largest oil producing country of the world, being exceeded only by the United States, Russia, and Venezuela.

The most important oil field is at Ploesti, about 30 miles due north of Bucharest, the capital and largest city of the country (in southern Romania.

Most of the oil (petroleum) produced was exported to foreign countries and Constanza, a port on the Black Sea, is the oil port of the country. Constanza is almost due east of Bucharest.

The Ploesti oil field was bombed a number of times during the recent war by U. S. airmen.

SOME NOTES ON ALASKA

(*Continued from page 372*)

wish that some company or individual would hire or grubstake me for a season so that I could make a thorough job of prospecting; this would result in some valuable orebodies being discovered. At any rate some day in the future, when a good stock of Alaskan minerals has been collected, I intend to open up an Alaskan Mineral Exchange.